tion will be given out of doors, rambles in the country under the guidance of experienced teachers being the chief feature. It is hoped to combine the natural history excursions with points of antiquarian and other interest in outlying districts, and an endeavour will be made to render the course useful, both for home life and school work. The report for 1907 on the work of the college as a whole shows that good progress continues to be made. The chief feature of the year was the establishment of a course in natural history, which has for its object the training of third-year students who have passed the ordinary gardening course at the college and wish to increase their knowledge of natural history subjects in order to qualify as teachers of gardening and nature study.

THE third International Congress for the Development of Drawing and Art Teaching is to be held in London from August 3 to 8 next. Previous meetings in Paris in 1900 and in Berne in 1904 proved very successful in stimulating the application of art to industry. The promoters of the London meeting direct attention to the fact that as a nation Great Britain compares unfavourably with her commercial competitors in the attention paid to applied art in technical schools. On these grounds, with others, an appeal is made to educational authorities and employers of labour to assist in making the forthcoming congress a success, both by contributions to the necessary funds and by interesting administrators and teachers in the scheme. Drawing should be allied with all subjects of study, but it is especially useful to the student of science, and it is to be hoped that the congress will lead to an improvement in the methods of teaching drawing in our schools, as well as to a recognition of its importance in a complete scheme of education. Full particulars of the London meeting can be obtained from the secretary of the congress, 151 Cannon Street, London, E.C.

THE second International Congress of Popular Education is to be held in Paris from October 1 to 4 next. It is being arranged by la Ligue francaise de l'Enseignement. Invitations have been sent to various educational associations in different parts of the world to send delegates to the congress. All expenses in connection with the congress are to be borne, we understand, by the league. Among the subjects to be introduced and discussed at the meetings in Paris may be mentioned:—Societies for the encouragement of the education of the masses, popular lectures and libraries, the education of women in household and maternal duties, professional education, the international exchange of children for educational purposes, and the system of visits by teachers for the study of foreign methods. It is hoped to publish the addresses and discussions at the congress, and in this way to bring together much valuable experience gained in different countries in the direction of solving difficult educational problems. There is every reason to hope that the meetings will prove even more successful than those of the first congress, held at Milan in 1906. All inquiries should be addressed to M. Léon Robelin, general secretary of la Ligue francaise de l'Enseignement, 16, rue de Miromesnil, Paris.

THE accounts for the year ending July 31, 1907, of the various London polytechnics show that the total ordinary receipts of all the institutions amounted for the year to 203,952*l*. The grants of the London County Council amounted to 77,358*l*., or 37·93 per cent. of the total receipts. Grants from the Board of Education reached 32,844*l*., or 16·11 per cent.; the amounts received from City Parochial Foundation were 28,330*l*., or 13·89 per cent., and from City companies, &c., 5917*l*., or 2·90 per cent. The total ordinary expenditure on revenue account of all the institutions amounted to 207,519*l*. Large increases occurred under two heads, viz. "teachers' salaries," 10,317*l*., and "apparatus and other educational appliances and furniture," 3116*l*. Taking the results as shown by the accounts, it is seen that, so far as ordinary income and expenditure are concerned, there was a deficit of 3567*l*. on the institutions as a whole. With regard to items of an exceptional nature—principally new building works and special equipment—the total income was 15,089*l*., of which the London County Council's grants amounted to 9401*l*., and the expenditure was 9113*l*. Of the total amount of revenue, it is interesting to note that the fees of students and members of the various polytechnics amounted in all to 47,255*l*., or 21·57 per cent., and what are called in the accounts voluntary subscriptions reached 9161*l*., or 4·18 per cent., nearly twice as much as in the previous year, though other percentages were practically the same in both years.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, December 5, 1907.—"On the Structure of *Sigillaria scutellata*, Brongn., and other Eusigillarian Stems, in Comparison with those of other Palæozoic Lycopods." By E. A. Newell **Arber** and Hugh H. **Thomas.** Communicated by Dr. D. H. Scott, F.R.S.

This paper contains the first full account of the structure of the Eusigillariæ or ribbed Sigillarias of the Rhytidolepis section. The stele has a well-marked pith, bounded by a continuous ring of scalariform tracheides—the primary wood—the outer margin of which is crenulated. The ribs are really formed of cortical tissues, and not by fused leaf-bases. They consist largely of phelloderm, and externally what is probably a small zone of primary cortex, which lay without the region of secondary meristermatic activity, still persists. The leaf-bases, consisting of thin-walled parenchymatous elements, merely form bracket-like projections from the ribs.

The presence of a ligule and a ligular pit has been detected for the first time. The course of the leaf-traces in the leaf-bases and cortical tissues has been followed with important results. The bundle is collateral, and without secondary wood. In the leaf-bases the trace consists of a *double xylem strand*, the two xylem groups being widely separated. These two strands unite as they pass through the phelloderm. The structure of the trace is almost identical with the foliar bundle of the leaf *Sigillariopsis sulcata*, which is obviously simply the leaf of a eusigillarian stem.

The parichnos increases greatly in size as we pass from the exterior of the stem to the inner margin of the periderm. The two strands further unite, first below and then above the trace, so that, at a deep level in the periderm, the trace is completely surrounded by a broad zone of this tissue.

January 16.—"The Conversion of Diamond into Coke in High Vacuum by Kathode Rays." By the Hon. C. A. **Parsons**, C.B., F.R.S., and Alan A. Campbell **Swinton.**

The apparatus employed consisted of a Crookes tube furnished with two concave cup electrodes of aluminium which, when supplied with high-tension alternating current, acted alternately as kathode and anode, and accurately focussed the kathode rays on to the diamond, which was supported on a plate of iridium.

As the proper degree of vacuum was reached by means of mercury pumps, and as the volts were raised, the diamond in each of the two experiments made became red, and then intensely white hot, until with about 9600 volts and 45 milliamperes passing through the tube it commenced to become black.

Finally, with 11,200 volts and 48 milliamperes (537 watts), a rapid disintegration of the diamond took place with considerable increase in volume, the residue having much the appearance and consistency of coke. As measured by a Féry optical pyrometer, the disintegration took place at the temperature of 1890° C.

Observations of the spectra of the residual gases in the tube before and after the conversion of the diamond into coke showed differences, but these were not thought sufficiently marked to determine with exactitude any variation in the nature of the gases present.

January 23.—"Report on the Eruptions of the Soufriere in St. Vincent in 1902, and on a Visit to Montagne Pelee in Martinique. Part ii.—The Changes in the Districts and the Subsequent History of the Volcanoes." By Dr. Tempest **Anderson.** Communicated by Prof. T. G. Bonney, F.R.S.

The principal points of interest in the observations made

during the author's second visit lie in (1) the changes wrought by denudation on the deposits left by that eruption; (2) the light thrown by those changes on the operation of the forces which had moulded the features of this island in its earlier history; (3) the information he was able to collect with regard to the volcanic disturbances subsequent to the great eruption of May, 1902; and (4) the return of vegetation to the devastated areas.

In the 1902 eruption a certain amount of the ejecta overtopped the Somma ring, *i.e.* the remains of the original great crater, and descended some of the valleys to the north of it; but by far the greater portion was discharged into the transverse depression which extends right across the island and separates the Soufrière from the mountain known as Morne Garu, about three miles to the south. The water from the crater lake was discharged at the beginning of the eruption down the Rabaka and Wallibu rivers, while the solid and gaseous ejecta, in the form of the incandescent avalanches and black clouds, descended to both sides of the island.

The most important geological phenomena were observed in the Wallibu district. These phenomena have been fully described in the published report, as also the subsidence of part of the coast. To this district, therefore, attention was especially directed in 1907 with the view of observing the further progress of the changes and the return of vegetation.

A description of the Wallibu valley is given in the full paper. In that district the beds of newer date have been dissected into flat-topped plateaux by small rivers running in deep gorges, which have again been filled in places by ejecta of eruptions and re-excavated in different degrees, and sometimes on different lines, leaving plateaux and terraces of different ages and heights. This action is well exemplified in the lower valley of the Wallibu. In the 1902 eruption this part of the valley was filled by the incandescent avalanche to a depth of at least 100 feet in the upper part, and less towards the sea, and it was in this deposit of hot ash that the explosions of steam and hot ash, flows of boiling mud, and other secondary phenomena took place. In 1907 almost the whole of this ash had been washed away, but a fragment remained in the shape of a terrace 60 feet to 80 feet high, situated on the north side of the valley. The ash of which it is formed is unstratified, and contains very few ejected blocks or fragments of any kind. The floor of the valley is all composed of water-sorted material, chiefly gravel and coarse sand, but with a good many blocks as big as a man's head. They represent ejected blocks and fragments of lava derived partly from the ash of 1902 and partly from older beds, the fine ash in each case having been washed away. The surface of the gravel bed showed marks of quite recent running water, and during the last winter, 1906–7, the river ran along the foot of the north bank of the valley. When examined in March, 1907, it ran along the south side of the valley, and had already in those few months excavated a new channel about 30 feet in depth. The stratification, as exposed in the side of this new valley, is very distinct, and the sorting by water, mentioned above, is very evident. Further up the mountain the remains of the avalanche became more abundant in the valley bottoms, and here they were also often better preserved, so that traces of the feather pattern erosion, so noticeable in 1902, were still visible on the surface. This was mainly due to the surface of these ash deposits, like those to be presently mentioned on the plateaux and on the ridges, having consolidated into a crust almost like a cement pavement which resists the action of the rain.

Another interesting point was observed with regard to these massive ash deposits. Instead of one stream re-establishing itself along the centre of the deposit, the tendency is for a new stream to form on each side at or near the junction of the new ash with the old valley slopes; and, as these streams deepen themselves, two new valleys are formed where only one previously existed, and the walls of each are composed on the one side of the new ash and on the other of older tuff, with occasional terraces of new ash. It appears to be due to the fact that the water from the old slopes, in running down into the original valley, meets the soft new ash, and at once turns down along the valley and so starts the new stream, and it seems likely that the chief cause of its so turning is that the surface of the deposit tends to be higher along the middle of the valley than at the sides, as is usual with mud-streams or glaciers. A good example of the action above described is to be found in a wide valley to the north of and parallel with the lower Wallibu valley, and bounded on the south by the Wallibu plateau. Before the 1812 eruption the Wallibu river flowed down this valley, but its course was changed after that eruption. The floor of the valley is now occupied by the gorges of two small rivers, divided by a very narrow ridge, formed of ash different from and less consolidated than that composing the walls of the main valley, and considerably lower than the Wallibu plateau. In 1902 both these gorges were filled with new ash to the level of the main valley floor. One of these, the Trespé gorge, now emptied of the 1902 ash, shows its north wall to be much higher than the south, and also formed of older and more consolidated tuff. The same conditions, with sides reversed, are seen in the other gorge, the higher bank in that case being the Wallibu plateau to the south.

The Wallibu plateau is composed of ash older than that dividing the above two small rivers, but still comparatively new, and its flat top and precipitous sides, both north and south, proclaim it to be in an early stage of denudation, while the south bank of the Wallibu river on the south of the plateau is composed of older tuff and lava, and shows a much more mature type of denudation, viz. sloping hills with rounded or ridged tops, and a good deal weathered into valleys or gullies. The north face of the plateau, like the south, is precipitous, and obviously much less advanced in weathering than the slopes of the Soufrière on the opposite side of the broad valley of the Wallibu Dry, and Trespé rivers to its north. The mass appears to be the remains of an avalanche, or succession of avalanches, of hot ash poured into the depression between the Soufrière and Morne Garu, on an enormously larger scale than anything formed by recent eruptions. It may be that the present bed of the Wallibu to the south and the broad valley to the north are enlarged and deeply excavated developments of the valleys that were formed at the sides of this prehistoric avalanche.

Descriptions of the changes in the fans and low plateaux subsequent to 1902, of the shore subsidence, and of the upper slopes of the mountain, are given in the full report, as well as a detailed description of the crater as seen in 1907.

The topography of the old crater is still correctly represented on the Admiralty Chart (published with the report, part i.). The whole of the interior of the crater is still quite bare, without any trace of returning vegetation; small patches of moss appear about the rim and on the slopes outside, then grasses, herbaceaus plants, and large sheets of ferns, and lastly, below a height of about 1500 feet, luxuriant tropical vegetation. It is interesting that this sequence presents many points of resemblance with that observed on Krakatoa.

The present condition of the devastated areas is described fully in the report, which contains also a history of subsidiary eruptions which followed the great one of May, 1902. The difference in character between the eruptions of the Soufrière and Montagne Pelée, referred to in the report of 1902, appears to have continued since that year, the outbursts from the former volcano being generally less frequent but more violent than from the latter.

The report also contains an account of a subsequent visit to the volcano of Montagne Pelée, in Martinique, with a description of the crater as the author then found it; a discussion of the phenomena of the remarkable extrusion and subsequent destruction of the dome and spine, which have been described by Lacroix and others, and a comparison of the sequelæ of the great eruptions in the two islands of Martinique and St. Vincent.

Entomological Society, March 18.—Mr. C. O. Waterhouse, president, in the chair.—*Exhibits.*—Dr. T. A. **Chapman**: Photographs of the empty egg-shells and young larvæ of *Papilio homerus*.—G. C. **Gahan**: (1) A remarkable larva of the Trictenomidæ, which, though heteromerous, was wholly different in character to the larvæ of that group;

(2) a larva of *Dascillus cervinus* from Ireland.—**President**: Photograph drawing of the larvæ of Coniopteryx, a small neuropteron common enough in its perfect state, but rarely found as a larva, when it may be beaten out of fir trees.—W. J. **Kaye**: Three Pereute species from the Chanchamayo district of Peru, viz. *P. leucodrosime*, *P. callinice*, and *P. callianira*, together with specimens of the Nymphaline *Adelpha lara*. These Pierines and Nymphaline occurred together at an elevation of from 2500 feet to 3000 feet. It was wrong to suppose that any *Heliconius melpomene*-like species entered the association, as Heliconius species of this pattern did not ascend to such an elevation, or if they ever did it was only as a rare exception. On the under-side, if when both Pereute and Adelpha are at rest they conceal the coloured portion of the fore-wing, the hind-wing would then give a very strong similarity of one to the other.—L. W. **Newman**: A long and varied series of *Smerinthus populi* bred from wild Bexley parents in June, 1907, the series ranging from extreme dark specimens (about 6 per cent.) to very light (about 10 per cent.), and pink shaded or tinged (about 20 per cent.), the remainder being intermediate forms.—*Paper.*—The larvæ of *Trictenotoma childreni*, Gray, and *Melittomma insulare*, Fairmaire: C. J. **Gahan.**

Chemical Society, March 19.—Sir William Ramsay, K.C.B., F.R.S., president, in the chair.—A new form of pyknometer: W. R. **Bousfield.**—The action of heat on α-hydroxycarboxylic acids, part iv., racemic-αα′-dihydroxyadipic acid and meso-αα′-dihydroxyadipic acid: H. R. **Le Sueur.** αα′-Dihydroxyadipic acid, melting at 146°, has been resolved into its optical antipodes by fractional crystallisation of its cinchonidine salt. The acid melting at 174°, when heated, forms a lactone-lactide, and must be regarded as the *meso*- or internally compensated variety.—The spontaneous crystallisation of sodium sulphate solutions: H. **Hartley**, B. M. **Jones**, and G. A. **Hutchinson.** The authors have examined the spontaneous crystallisation of sodium sulphate solutions, and have found that if the solutions are subjected to mechanical friction three of the four possible solid phases, viz. ice, $Na_2SO_4,7H_2O$, and Na_2SO_4 are produced spontaneously at different temperatures. The spontaneous crystallisation of the fourth solid phase, $Na_2SO_4,10H_2O$, is of rare occurrence.—Constitution of hydroxyazo-compounds. Action of diazomethane and of mercuric acetate: C. **Smith** (and in part A. D. **Mitchell**).—*Ortho*bromophenols and some bromonitrophenols: P. W. **Robertson.**—The constitution of thiocyanates containing an electronegative group: A. E. **Dixon** and J. **Taylor.**—The quantitative conversion of aromatic hydrazines into diazonium salts: F. D. **Chattaway.** All primary aromatic hydrazines can be quantitatively converted into the corresponding diazonium salts either by chlorine or by bromine. The operation can be most easily carried out by dissolving the hydrazine in glacial acetic acid, cooling the solution to about −15° by the addition of crushed ice, and either passing in a rapid stream of chlorine or adding the calculated quantity of bromine dissolved in acetic acid and similarly cooled by ice.—Quantitative separation of thallium from silver: J. F. **Spencer** and Miss M. **Le Pla.** A quantitative separation of the salts of silver and thallium is effected by a stream of chlorine, whereby the thallium is oxidised to the very soluble thallic chloride and the silver is precipitated as silver chloride. The thallium is eventually precipitated and weighed as thallous iodide.—Molecular volumes of the nitrites of silver, mercury, and he alkali metals: P. C. **Rây.**—Lithium nitrite and its decomposition by heat: P. C. **Rây.**—The existence in aqueous solutions of a univalent cadmium ion, a subvalent thallium ion, and a bivalent bismuth ion: H. G. **Denham.**—Note on the oxidation of phenylhydrazine by Caro's acid: J. C. **Cain.**—Some reactions of keten: F. **Chick** and N. T. M. **Wilsmore.**—*Para*- and *meta*-nitrosoacetanilide: J. C. **Cain.**—Labile isomerism among acyl-salicylamides and acyl-hydroxyamines: A. W. **Titherley.**

Royal Microscopical Society, March 18.—Lord Avebury, F.R.S., president, in the chair.—A series of fourteen mounted specimens of the rarer species of fresh-water polyzoa, mostly foreign species from Lake Tanganyika, Rhodesia, northern India, America, and Japan: C. F. **Rousselet.**—Annual address: seeds, with special reference to British plants: the **President.** Attention was confined to the dicotyledons, the consideration of seeds of the conifers and monocotyledons being deferred until next year. The subject was treated from the point of view of the dispersal of the seeds and fruits by various agencies.

Royal Anthropological Institute, March 24.—Prof. W. Ridgeway, president, in the chair.—Sinhalese magic: Dr. W. L. **Hildburgh.** The paper dealt with a variety of subjects, including charming ceremonies, astrology, and devil dancing. The charms were of various kinds, protective, for instance, to keep off evil spirits, or to guard the house, in which category amulets were included; love charms, charms to secure the favour of anyone, for example, a judge, and the like. A number of horoscopes were exhibited, which almost invariably take the form of a roll, as it is considered necessary to write each on a single leaf, which is best preserved in the roll form. The language in which horoscopes are written can only be read by the initiated, and consequently they are often translated, and the translations may be written in ordinary books without prejudicing the results. On the subject of devil dancing, Dr. Hildburgh exhibited a number of slides showing the different devils represented, and also a collection of the masks and costumes worn. Some of the devils represented are those who actually afflict the patient; others are powerful devils by whom the afflicting devils are controlled, while others again are devils who are afflicted as the patient is afflicted.

EDINBURGH.

Royal Society, March 16.—Dr. R. H. Traquair, F.R.S., vice-president, in the chair.—The lamellibranch fauna found in the Millstone Grit of Scotland, and the lamellibranchs from the Silurian rocks of Girvan: Dr. Wheelton **Hind.** The first of these important papers contained an account of the lamellibranchs found by the staff of the Geological Survey of Scotland in beds of the Millstone Grit series, between the Castlecary Limestone and the Coal-measures. The fauna is quite unique, containing, for example, the remarkable genus Prothyris, not hitherto recorded from British Carboniferous rocks. The specific form seems to be identical with that found in the Upper Coal-measures of Nebraska. Although a few members in the newly discovered fauna of the Scottish series have been found in the Millstone Grit of Hazel Hill, Yorkshire, and in beds immediately below the Coal-measures of Bristol and South Wales, yet the fauna as a whole bears a striking resemblance to the fauna of the American Coal-measures. The second paper dealt with the fine series of lamellibranchs collected by Mrs. Robert Gray from the district of Girvan. Many of the shells were in remarkable preservation, enabling the details of the hinge plate and interior to be examined. It was interesting to note such a fine development of lamellibranchs in these early rocks. A great proportion of the species are probably new, and many of the genera are described for the first time from British specimens. Here again the resemblance to certain American faunæ, especially those from the Trenton and Hudson groups of Minnesota and New York, is very striking.—A test for continuity: Dr. W. H. **Young.**—The theory of hessians in the historical order of development: Dr. Thomas **Muir.**

PARIS.

Academy of Sciences, March 30.—M. H. Becquerel in the chair.—Various properties of the curves expressing either by their envelope, or directly, the coefficients of yield *m* of a thin-walled vertical weir, without lateral contraction, as a function of the relative pressure N′ exercised under the sheets at the level of the sill: J. **Boussinesq.**—The determination of the time, both on land and at sea, with the aid of wireless telegraphy: Bouquet **de la Grye.** With the present installation at the Eiffel Tower, wireless signals can be sent a distance of 2000 kilometres, and it has been estimated that by increasing the electric energy this distance could be doubled. It is suggested that a special signal should be sent exactly at midnight, and it would have to be the subject of an international arrangement to avoid possible confusion by multiplication of such signals. Such a time signal would

be of the greatest service to navigators within its radius.—On the proposal of the president, the examination of the proposition in the preceding note was referred to a committee composed of the members of the sections of astronomy, geography, navigation, and physics, together with MM. Darboux, Poincaré, and Cailletet.—The earthquake of March 26, 1908 (Chilapa, Mexico), registered at Paris: G. **Bigourdan.**—The manuscripts of Evariste Galois, catalogued by M. J. Jannery, and kept under this heading at the library of the Institute of France.—The relations between lecithin and tubercle bacilli and tuberculin: A. **Calmette,** L. **Massol,** and M. **Breton.** Using the hæmolytic action of snake poison in presence of lecithin as a test, the authors prove that the tubercle bacillus has an affinity for lecithin, and tuberculin behaves in a similar manner. The bearing of this on the reaction of tuberculin on the body is discussed.—The present state of the problem of the dispersion of light rays in interstellar spaces. A first attempt at the application to provisional determinations of stellar distances: Charles **Nordmann.** Discussing the recently published results of M. Tikhoff, the author points out that both their methods, although quite independent, lead to the same qualitative results, namely, that there is really produced a dispersion of light in interstellar space, and that it has the same sense as ordinary refractive media.—A phenomenon attributable to positive electrons in the spark spectrum of yttrium: Jean **Becquerel.** The experimental study of the Zeeman effect in the spark spectrum of yttrium gives results which may be most simply explained by assuming the presence of positive electrons.—The number of electrons in the atom: J. **Bosler.**—The determination of the factor of ionisation in solutions of hydrochloric acid: E. **Doumer.** A study of the ratio of the volumes of hydrogen and oxygen evolved during the electrolysis of solutions of hydrochloric acid of different concentrations with anodes of silver or mercury.—The density of the vapour of propionic acid: A. **Faucon.** By the method of Dumas the vapour density of propionic acid was found to vary from 3·27 at 123° C. to 2·57 at 210° C., the theoretical vapour density being 2·55. Two thermodynamical formulæ are applied to the results to calculate the heat of vaporisation of propionic acid.—The OH(1)Cl(2 : 4 : 6) trichlorophenol and its transformation into chloroquinones: E. **Léger.** The trichlorophenol is prepared by the action of a strong solution of sodium hypochlorite upon phenol; nitric acid (1·41) converts this into a mixture of trichloroquinone and tetrachloroquinone.—Styrolene oxide: MM. **Tiffeneau** and **Fourneau.**—The β-αx-dialkyl-ketone alcohols: E. E. **Blaise** and I. **Herman.**—The magmatic parameters of the series from the volcano Monte Ferru, Sardinia: M. **Deprat.**—Researches on the development of *Gloeosporium nervisequum*: A. **Guilliermond.**—The Lagoa Santa race in the precolombian populations of the equator: M. **Rivet.**—The American Synalpheæ: M. **Coutière.**—The tectonic of the littoral of the Algero-Moroccan frontier: Louis **Gentil.**

DIARY OF SOCIETIES.

THURSDAY, APRIL 9.

ROYAL INSTITUTION, at 3.—The Animals of South America: R. Lydekker, F.R.S.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Electric Supply Prospects and Charges as affected by Metallic Filament Lamps and Electric Heating: H. W. Handcock and A. H. Dykes.

INSTITUTION OF MINING AND METALLURGY, at 8.—The Electrical Equipment of Gold Mines: H. J. S. Heather.—Addendum to Paper on Earth Temperatures on Witwatersrand Gold Fields: H. F. Marriott.—The Carat Weight: E. J. Vallentine.—An Electro-magnet for Testing the Suitability of an Ore for Magnetic Separation: L. H. L. Huddart.—The Gold Alluvials of the River Drau in Hungary: A. von Gernet.

FRIDAY, APRIL 10.

ROYAL INSTITUTION, at 9.—The Carriers of Positive Electricity: Prof. J. J. Thomson, F.R.S.

ROYAL ASTRONOMICAL SOCIETY, at 5.—Measures of Southern Double Stars in 1907: J. L. Scott.—Tables of the Hypergeometrical Functions $F\left(1/6, 5/6, 2, \sin^2\frac{\epsilon}{2}\right)$, and $F\left(-1/6, 7/6, 2, \sin^2\frac{\epsilon}{2}\right)$ between the Limits iota equals 90 and 180 Degrees: C. J. Merfield.—On Dr. Roberts's Method of Determining the Absolute Dimensions of an Algol Variable Star: Rev. J. Stein.—On the Orbit of Σ2; Secchi 2=Σ2481 BC; β581 AB; and γ Velorum =Copeland 1: T. J. J. See.—Note on the Adopted Coordinates of the Bombay (Colaba) Observatory: A. M. W. Downing.—*Probable Papers*:—Description of a Long-focus Cœlostat Reflector: J. H. Reynolds.—Note on the newly-discovered Eighth Satellite of Jupiter: Royal Observatory, Greenwich.

PHYSICAL SOCIETY, at 8.—An Experimental Investigation of the Nature of γ Rays: Prof. W. H. Bragg, F.R.S., and Mr. Madsen.—Experiments on Artificial Fulgurites: Miss D. D. Butcher.—Short-spark Phenomena: W. Duddell, F.R.S.

INSTITUTION OF MECHANICAL ENGINEERS, at 8.—The Governing and the Regularity of Gas-engines: J. Atkinson.—The Effect of Mixture Strength and Scavenging upon Thermal Efficiency: Prof. B. Hopkinson.

SATURDAY, APRIL 11.

ROYAL INSTITUTION, at 3.—Electric Discharges through Gases: Prof. J. J. Thomson, F.R.S.

MONDAY, APRIL 13.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—Explorations on and Around Prince Charles Foreland, Spitsbergen: Dr. W. S. Bruce.

TUESDAY, APRIL 14.

ROYAL STATISTICAL SOCIETY, at 5.

INSTITUTION OF CIVIL ENGINEERS, at 8.—*Further Discussion*: The King Edward VII. Bridge, Newcastle-on Tyne: F. W. Davis and C. R. S. Kirkpatrick.

WEDNESDAY, APRIL 15.

GEOLOGICAL SOCIETY, at 8.—The Geological Structure of the St. David's Area (Pembrokeshire): J. F. N. Green.—Notes on the Geology of Burma: L. V. Dalton.

ROYAL METEOROLOGICAL SOCIETY, at 7.30.—Report on the Phenological Observations for 1907: E. Mawley.—The Anticyclonic Belt of the Southern Hemisphere: Colonel H. E. Rawson, C.B.

ROYAL MICROSCOPICAL SOCIETY, at 8.—On Dendritic Growths of Copper Oxide in Paper: J. Strachan.—Nature's Protection of Insect Life: F. Enock.

VICTORIA INSTITUTE, at 3.30.—The Assuan and Elephantine Papyri: Dr. L. Belleli.

CONTENTS.

	PAGE
Experimental Embryology. By J. A. T.	529
Geological Revivalism. By Prof. Grenville A. J. Cole	529
Hydraulics	530
Technical Chemical Analysis. By W. A. B.	531
British Archæologists in Italy. By H. H.	532
Our Book Shelf:—	
Hobart and Ellis: "Armature Construction"	532
Yerkes: "The Dancing Mouse; a Study in Animal Behaviour."—W. B.	533
Hoernle: "Studies in the Medicine of Ancient India"	533
Kelman: "The Sea-shore, Shown to the Children"—Frank Balfour Browne	533
Engel: "Déviations des Compas"	534
"Bulletin of Miscellaneous Information. Royal Botanic Gardens, Kew"	534
Lloyd: "The Will to Doubt: an Essay in Philosophy for the General Thinker"	534
Letters to the Editor —	
An Annotated Copy of Newton's "Principia."—W. R. B. Prideaux	534
Proposed Alteration in the Calendar.—Dr. D. Mackie	534
Helium in the Atmosphere.—Dr. J. W. Evans	535
April Meteors.—John R Henry	535
Coloration of Glass and Quartz by Radium.—Charles E. S. Phillips	535
An Early Notice of Neolithic Implements.—Prof. John L. Myres	535
Notes on Ancient British Monuments. VIII. The Aberdeen Circles (*continued*). (*Illustrated.*) By Sir Norman Lockyer, K.C.B., F.R.S.	536
Trees. (*Illustrated.*) By A. W. B.	538
Dr. James Bell, C.B., F.R.S. By T. E. T.	539
Notes	540
Our Astronomical Column:—	
Comet 1907*d*	544
Observatory Map of the Moon	544
The Recent Maximum of Mira Ceti	544
Sun-spot Observations	544
Meridian Circle Observations of Parallax Stars	544
The Recent Total Solar Eclipse	544
A New Expedition to the Southern Hemisphere	544
The Hamburg Observatory	544
The Ziegler Polar Expedition (*Illustrated.*) By Dr. C. Chree, F.R.S.	544
Sanatoria for Consumption. By Dr. R. Fielding-Ould	546
The Society of Dyers and Colourists	547
Encke's Comet	547
University and Educational Intelligence	548
Societies and Academies	549
Diary of Societies	552